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Marshall Tests Hair-Raising Technique to Clean Up Oil Spills

Most folks with oily hair use shampoo to get the oil out. But one Alabama hairdresser likes oily hair and is working with NASA to use human hair to soak up oil spills. Researchers at Marshall Space Flight Center are testing this hair-raising recovery technique for oil spilled in water.

The idea is the inspiration of Phillip McCrory, a Madison, Ala., hairdresser. McCrory was watching television coverage of 1989's oil spill in Alaska's Prince William Sound. "I saw an otter being rescued whose fur was saturated with oil," said McCrory. "I thought, if animal fur can trap and hold spilled oil, why can't human hair?"

In a home experiment, McCrory stuffed five pounds of hair he'd cut into a pair of his wife's pantyhose. He tied the ankles of the hosiery together to form a ring-shaped collection bundle. Then, filling his son's wading pool with water, he put the hair-filled ring of hosiery into the center of the pool and poured used motor oil into the middle.

"When I pulled the legs of the hosiery ring together, the oil had adsorbed onto the hair inside of it," McCrory said. "I couldn't see a trace of oil in the water." McCrory found that human hair adsorbs — rather than absorbs — oil. That is, instead of bonding with the hair, the oil gathers in layers on the hair's surface. This allows for easy recovery of the oil and its reuse by simply squeezing it from the collection bundles.

"When I wrung the hosiery out, most of the oil was recovered," said McCrory. "The remainder was broken down and disposed of when I washed the hosiery with detergent."

Before McCrory invested more time and money into his idea, he needed to determine that his was an original idea — that no one else had thought of this solution. He researched and found patents similar to his idea that involved using sheep's wool and duck feathers. Wool and duck feathers, however, are commodities in demand for items like clothing and insulation and don't adsorb as well as human hair.

"After doing my research," said McCrory, "I realized I'd found a commercial use for what's really a waste product. Tons of human hair are cut every day and tossed into landfills." Because some samples of human hair have been found that are thousands of years old, McCrory believes using it to clean up oil spills would both put it to work and reduce the amount of waste material going into

*See **Oil Clean-up** page 5*

Photo by Jack Ray

Governor James Signs Open House Proclamation

Gov. Fob James looks over a brochure about the Marshall Center before signing a proclamation stating May 16, 1998 "Marshall Space Flight Center Open House Day" in Montgomery on Tuesday. Marshall Open House Committee members attending the signing (standing from left to right) were Marshall's '97 Open House Committee Chairman Cedreck Davis, Open House '98 Chairperson May Wales, Co-chairmen Mark Boudreaux and Thom Holden; and Susan Cloud, deputy director Customer Employee and Relations Directorate.

Alabama Men's Hall of Fame to Induct von Braun

Dr. Wernher von Braun will be inducted into the Alabama Men's Hall of Fame during a ceremony on September 22 at The Club atop Red Mountain in Birmingham.

A bronze plaque will be unveiled at the ceremony and will be installed in the Harwell-Davis Hall at Samford University in Birmingham.

The hall of fame was created to recognize men native to or identified most closely with Alabama who have made significant contributions to the state, nation or world.

Technical Standards Program Office Announces New Website

by Buddy Martin

Technical professionals in NASA and NASA's partners in programs and projects can now access and review NASA-wide Preferred Technical Standards by addressing the NASA Technical Standards Program's new Homepage at http://standards.nasa.gov. Marshall Center has been assigned the Lead Center role for NASA's Technical Standards Program.

According to Paul Gill, program coordinator for NASA's Technical Standards Office, providing access to the standards developed by and adopted by NASA is a major focus of attention for future evolution of this website. The listed standards are referred to as "Preferred Technical Standards" in the sense that they have been used successfully on NASA programs and are generally considered to represent best current practice in specific areas.

NASA's primary objectives in developing a list of "preferred" technical standards are to:

- ♦ improve access and availability of standards products for program/project use;
- ♦ provide a basis for improving cooperation, efficiency, and cost-effectiveness by encouraging consolidation of space systems development practices;
- ♦ provide a mechanism to eliminate overlap and conflicts among current standards documents; and,
- ♦ provide a mechanism to accelerate NASA adoption of Voluntary Consensus Standards (prepared by national and international Standards Developing Organizations).

NASA documents can be downloaded directly from the Homepage. The Homepage also provides links to numerous Voluntary Consensus Standards Developing Organizations' and Government standards related websites to obtain these documents directly from the issuing organizations. The site will be maintained and updated as new NASA technical standards are developed and Voluntary Consensus Standards are adopted.

Computer Monitoring Part of Security Study at Marshall

The General Accounting Office (GAO) has initiated a penetration study of NASA computer systems, according to Charles Houston, director of Marshall's Information Systems Services Office. GAO intends to use the National Security Agency (NSA) to conduct penetration tests over the next couple of months.

Communications security monitoring will occur as part of this test. It will affect computers that are government-owned or government-funded. There is no expectation of privacy in using the systems. Users consent to their keystrokes and data content being monitored. For information, contact Marshall Information Technology Security Coordinator Bob Keasling at 4-1223.

Photo by Adeline Byford

Tree Planting Part of Earth Day Activities

Director of Marshall's Science and Engineering Directorate Bill Taylor (left), Jeff Luvall (center) of Marshall's Global Hydrology & Climate Center and Charles Horn, Chief of the Water Division at Alabama's Department of Environmental Management, plant a water oak tree at Marshall Center's Earth Day Tree Planting Ceremony, April 22, in front of Marshall's Child Development Center.

Brown Selected Director, Internal Relations & Communications Office

Norman Brown has been selected Director, Internal Relations and Communications Office within the Customer and Employee Relations Directorate at Marshall Center. He formerly served as chief, Space Propulsion Branch within Marshall's Propulsion Laboratory.

Norman Brown

The Internal Relations and Communications Office will serve as the focal point for all internal communications, such as Inside Marshall, Marshall Star, Daily Planet and other electronic and audiovisual distribution systems. In addition, the office will coordinate and communicate Marshall strategic and implementation planning.

Brown joined Marshall in 1985 after working in private industry with United Space Booster, Inc. in the non-metallic materials area. Since coming to Marshall, he has worked in the Program Development Directorate as a fluids/thermal analyst and space transportation study lead engineer, later serving as chief, Systems Integration and Requirements Branch.

In 1996, Brown transferred to the Propulsion and Mechanical Systems Division, Propulsion Laboratory.

Work Relationship Turns Into Friendship

by Ann Marie Bryk

It all began very early on a Monday morning. The aroma of fresh-brewed coffee along with discussions about weekend sporting events and home projects filled the air. They were friends, sharing ideas and preparing for a new work week.

Contract Specialist Gary Bugbee, and Procurement Analyst David Brock have been buddies, working together in Marshall's Procurement Office for several years. But it wasn't until Bugbee and Brock traveled together on a week-long business trip that their friendship bonded.

"Because David is blind, I knew he would need some assistance getting around the hotel and becoming familiarized with the surrounding area," Bugbee said. "I volunteered to help him."

Bugbee stepped forward, throwing his right elbow in to help.

"Thanks to Gary I was able to get around the building without any problems, including going to the cafeteria by myself," Brock said.

Through conversation, Bugbee and Brock found they had much in common. A fellowship formed around them, faith being the common denominator.

During a lunch break from Marshall's Procurement Office, Procurement Analyst David Brock (left) and Contract Specialist Gary Bugbee work out together at the Center's gym. ***Photo by Terry Liebold***

They enjoyed each other's company, and as their friendship grew, Brock and Bugbee began to draw from one another's strengths. Their camaraderie led to a commitment of working out together at Marshall's gym. Both Bugbee and Brock had gotten away from exercising regularly and each held individual desires to improve their health through exercise. Brock urged Bugbee to begin exercising again, and offered to go with him to the gym. A decision was made between them to commence a weekly routine. "My tendency is not to follow a regular work out schedule, but David is persistent," Bugbee stated. "He is very strong, self motivated and I've learned a great deal about self-discipline from watching him." Brock and Bugbee now have a set routine, working out three times per week at the gym.

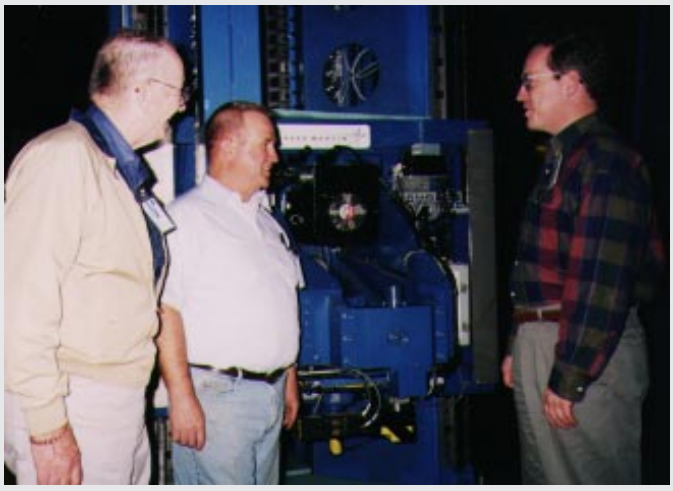
Brock finds partnership important, especially when working out. He admits there are times he lacks the desire of going across Center to the gym.

"There are days when I just don't feel like going, but I know that if I don't go, Gary might not go," Brock said.

Brock's constant search for self-improvement and friendship with co-workers, has a positive influence at Marshall. He has been involved in helping promote social economics at Marshall.

"David is a real source of encouragement in the office," Bugbee said. "His positive traits foster personal drive, initiative and good work ethics."

Although Bugbee and Brock don't agree on everything, both agree on the importance of friendship. "Friends offer support and strength necessary for getting through problem areas of life," Bugbee said. "Friendship helps you overcome life's hurdles," Brock answered. "I consider Gary one of my best friends."



Courtesy photo

American Welding Society Visits Center

Chip Jones (right), from Marshall Center's Metallurgical Research and Development Branch, talks with Ed Monroe (left) and Joe Smith (center), members of the American Welding Society (AWS), about the Friction-Stir Welding machine. The Greater Huntsville Section of AWS toured Marshall Center's welding facilities last week.

Tests Show New Air Turbulence Sensor Could Make Air Travel Safer

NASA is testing a new sensor that could make air travel safer by detecting previously invisible forms of clear air turbulence and giving pilots time to take safety precautions. Early tests of the new clear air turbulence sensor are promising, officials say.

Clear air turbulence is an invisible safety hazard for aircraft. Though seldom damaging to modern aircraft, which are designed to withstand its stresses, it is the leading cause of in-flight injuries among the flying public.

"During the tests, the system observed turbulent regions of air ahead of the aircraft as it moved forward. The aircraft experienced disturbances as it penetrated the turbulence. In that scenario, if an alarm were sounded when turbulence was first detected, passengers could have quickly returned to their seats and fastened their seatbelts before the encounter," said project manager Rod Bogue of the Dryden Flight Research Center, Edwards Air Force Base, Calif.

Flights of the detector originated from Jefferson County Airport, near Broomfield, Colo. The experiment was flown on three separate flights for a total of more than seven hours at altitudes as high as 25,000 feet. Additional flights are slated to add to the turbulence database and to fine-tune the sensor for better measurements.

Currently there are no effective warning systems for clear air turbulence, which occurs at high altitudes near jet streams and in the vicinity of mountain ranges, and as far as 50 miles or more from developing storm systems. It's been referred to as "rough air" or "air pockets," that can be felt, but not seen.

The sensor device, called Airborne Coherent LiDAR for Advanced In-flight Measurement, was designed and built by Coherent Technologies Inc., Lafayette, Colo., for NASA.

It relies on a form of laser technology called Light Detection and Ranging (LiDAR), to detect changing velocities of tiny particles in turbulent air. As long as the wind velocity remains uniform, no turbulence exists.

But if the laser beam detects changes in the velocity, it's a clear indication of turbulence ahead. The laser technology is similar to the more familiar radar and can be envisioned as a kind of infrared radar.

NASA's CFO Awards Program Recognizes Marshall Team Members

Two Marshall team members were selected for Special Act of Service Awards as part of the 1998 Agency Chief Financial Officer (CFO) Awards Program for Improved Financial and Resources Management.

Jane Locke was awarded for her leadership responsibility of Marshall's institutional budget. She was instrumental in developing the strategy and recasting of the fiscal year 1997 budget in a full cost mode. Paul Agnew was recognized for his significant contributions to the progress of NASA's Integrated Financial Management Project.

According to Arnold Holz with Nasa's CFO Office, the selection process was challenging due to numerous innovative and effective techniques implemented to improve Center and Agency financial and resources management.

Missed Appointments Affect Medical Center's Efficiency

Marshall Center's Occupational Medicine Clinic personnel are concerned with the dramatic increase in the number of no-shows for scheduled physical examinations.

To help maintain the clinic's high level of productivity, patients are urged to notify the clinic at 544-2390 as soon as possible if unable to keep a scheduled appointment.

Photo by Adeline Byford

Ghosh Begins Tenure in Associateship Program

Dr. Kajal Ghosh began a one-year tenure in the National Research Council Research Associateship Program March 26, as a resident research associate in Marshall's Space Sciences Laboratory. Ghosh will be working with his advisor, Dr. Brian Ramsey in the Astrophysics Branch. The title of Ghosh's proposed research is "Origin and Location of Gamma Ray Emission from the Egret Blazers." Ghosh is from the Vainu Bappu Observatory of Kavalur in India.

Upcoming Events

Marshall's Open House '98 Committee Seeks Help Distributing Flyers

Marshall Center's Open House Committee needs your help in spreading the word about Open House '98 to your friends and neighbors in the local community.

If you would like to help distribute Open House flyers, visit the Open House website or contact Michele Fowler by e-mail or call 4-0392.

Marshall's Open House is set for 9 a.m. to 6 p.m. May 16. Visitors will be able to see the Space Station being built, meet astronauts, see rocket tests and visit Mission Control Huntsville, in addition to a host of other exciting activities.

The official homepage for Marshall's Open House is up and running. Visitors to the site can volunteer, peruse the exhibiting organizations' homepages, or look up Marshall Open House policies and guidelines.

Retirees interested in volunteering should call Billie Swinford at 4-0087.

The web address is: **http://www.msfc.nasa.gov/openhouse.** For more information on the open house, call 1-888-901-NASA.

Obituaries

Hartlein, John, 82, Gulf Shores, Ala., died Nov. 9, 1997. He retired from Marshall in 1974 where he worked in the Program Management Office. He is survived by his wife Evelyn Hartlein.

Faulkner, William, 82, Troy, died April 7. He retired from Marshall in 1975 where he worked as an engineering technician. He is survived by his wife Winifred Faulkner.

Farabee, Arlie, 81, Guntersville, died April 3. He retired from Marshall in 1974 where he worked as an aerospace engineering technician. He is survived by his wife Rainer Farabee.

Hazle, Charles, 68, Hartselle, died March 16. He retired from Marshall in 1990 where he worked as an electronics technician.

Open House '98 Displays to Include 25th Anniversary of Skylab Exhibit

by Mike Wright

Among the events scheduled for Marshall's Open House on May 16, will be a display commemorating the 25th anniversary of Skylab. The display area will include Skylab memorabilia, photos and commemorative items. Skylab crew member Owen Garriott will be among the featured attendees.

Skylab, first launched May 14, 1973, was the first American space program wholly dedicated to scientific research. Marshall played an important role in the unprecedented scientific venture, both before and during the mission's operational phase.

Skylab's three different three-man crews spent up to 84 days in Earth orbit performing more than 100 experiments.

In addition to providing the four Saturn launch vehicles for the mission, Marshall was responsible for directing many of the experiments.

Marshall retirees and other personnel who participated in the Skylab program in the 1970s are encouraged to visit this special display which will be located in the northeast courtyard near Bldg. 4200.

TABES '98 Planned for May 12-13

The 14th annual Technical and Business Exhibition/Symposium (TABES) will be held May 12-13 at the Von Braun Center.

The conference, centered around the theme "Advancing on the Future," will include speakers and exhibits that address meeting the new challenges of being competitive in future market environments as they relate to business, space, defense and education. Display of military and space hardware developed in Huntsville will be a new addition to this year's conference.

John Horack, of Marshall Center's Space Sciences Laboratory, will speak and Jeff Ding will discuss friction stir welding development at Marshall.

According to Dr. J. Richard Fisher, TABES 1998 general chairman, this year's event is expected to have the largest participation of exhibitors and attendees in TABES history.

Oil Clean-up

Continued from page 1

landfills. Furthermore, oil-saturated bundles of hair can be burned as fuel and the energy value that the collection bundles contain can be recovered.

McCrory approached the Center's Technology Transfer Office with the proposal that NASA test his idea under controlled laboratory conditions. Marshall agreed because its researchers believed it had potential use by NASA and other U.S. government agencies.

Successful preliminary field tests also influenced Marshall's decision to test McCrory's system further. In an initial test, David Glover, a chemical systems supervisor for Marshall contractor BAMSI, Inc., filled a 55-gallon oil drum with 40 gallons of water and 15 gallons of oil. "The mixture was filtered through nylon bags filled with hair," said Glover. "When the water was tested after just a single pass through McCrory's innovative filter, only 17 parts of oil per million parts of water remained."

McCrory estimates that 25,000 pounds of hair in nylon collection bags may be sufficient to adsorb 170,000 gallons of spilled oil. Preliminary tests show that a gallon of oil can be adsorbed in less than two minutes with McCrory's method.

There's also a potential cost savings in McCrory's method. Present oil cleanup methods cost approximately $10 to recover a gallon of oil. McCrory's system may cost as little as $2 per gallon and offers the additional benefit of being able to use the recovered oil for fuel.

Tests of the new system are expected to be completed later this spring.

Employee Ads

Miscellaneous

★ Twelve clubs, bag, cart, $65; aluminum crutches, $5. 536-8951
★ Sears washer, $95; Whirlpool undercounter dishwasher, $65; heavy duty sandbox, $20. 881-6040
★ 1992 Chaparral SL1800 ski boat, Volvo Penta 110hp w/trailer, dry docked, $7300. 881-0713
★ WeedEater 6 HP tiller, disassembled, $350. 837-0085
★ Intel Pentium-120 chip, motherboard, $80; Mitsumi 4X-CD ROM, $25; SVGA video card, $10 o.b.o. 828-9651
★ Altec-Lansing 8A speaker system custom cabinets, pair, $400 o.b.o. 883-2653
★ Fiberglass, flatbottom canoe w/trailer, $200. 895-9521
★ Craftsman 22" lawnmower/mulcher, 5hp w/rear bag, 4 years old, $80. 461-8067
★ 1989 Glasstream 182 Caravelle 175hp I/O, $6300. 722-0417
★ Men's sportscoats, size 38R, $30 ea.; men's dress slacks, size 32, $10 ea. 776-9165
★ Misc. windsurfing gear, make offer, some items free. 534-1461
★ Band saw, Craftsman 12" throat, 2-spd, 80" blade, tilt sander, light, $150. Terry 880-8134
★ Oak bedroom suite, $225 o.b.o.; 10" diam. Roll Tide stained glass lamp shade, $75; MusicStar multi-media music system, $50. 880-3402
★ Malti-Poo puppies, CKC registered, $150 ea. 753-2278
★ Kenmore washer/dryer set, dryer needs timer, $125 pair o.b.o. 753-2278
★ Lhasa Apso puppies, AKC registered, 9 weeks old, wormed, shots. 830-9453
★ 1986 Dynasty ski boat, 18' w/ 200hp Mercruiser I/O, bowrider, $6,000. 881-6670
★ Yard Sale, Fri. 2-6 p.m.; Sat. 7 a.m.-1 p.m., Medical District, 2714 Thornton Circle. 519-6557
★ Clock, tabletop, half hour chime, hourly strike, key wind, $75. 852-3501
★ Bicycle, 12-speed Spaulding, touring, $40. 882-6446
★ Craftsman remote transmitter for 1/2hp garage door openers, $10 ea. 837-7382

Vehicles

★ 1994 Nissan Quest XE, 65K miles, all options, $11,950. 776-3040
★ 1989 Oldsmobile Delta 88, loaded, $2,500 o.b.o. 922-0958
★ 1993 Toyota Celica GTS, sun roof, automatic, CD, cassette, loaded, $11,250. 533-5543
★ 1992 Ford Taurus GL, 4 DR, V6, gray, 99K miles, $3,990. 882-0350
★ 1993 Buick Park Avenue, 65K miles, leather, power everything, $11,995. 880-8134
★ 1989 Ford Mustang LX hatchback, auto., blue in/out, rear spoiler, factory alloy wheels, $2,250 firm. 753-2278
★ 1989 Chevrolet Astro cargo van, rear bench seat, 120K miles, $3,200. 534-0608
★ 1992 Ford E150 hightop conversion van, 82K miles, FT/rear, a/c, TV/VCR, rear AM/FM/cassette, rear bench/bed, $9,000. 830-4846
★ 1988 Caravelle 185, I/O, w/sundeck, 175HP, Chevy 4.3L, $4,800. 757-8163
★ 1991 Ranger XLT Supercab, V-6, 5-spd, reworked AC, new shocks and front brakes, bedliner, sport wheels, 91K miles, $5,400. 880-9025
★ 1995 Isuzu Rodeo 4x4, Black, tinted windows, lots of options, 55K miles, $18,000. o.b.o. 355-6116

Found

★ Car key in parking lot of Bldg. 4203. 544-4758

Center Announcements

☛ ***MARS Ballroom Dance Club*** — The MARS Ballroom Dance Club will offer intermediate Mambo and Merengue lessons, 7 to 8 p.m. and beginners' Foxtrot and Triple Swing lessons, 8 to 9 p.m. on May 4, 11, 18 and 25. The classes will be held in the Parish Hall of Saint Stephen's Episcopal Church at 8020 Whitesburg Drive. These lessons are available to club members and their partners/guest at a cost of $8 per person. For more information call Pat Sage at 544-5427.

☛ ***Facilities Retirement Breakfast*** — The Facilities Retirement Breakfast will be at 8 a.m. on May 12 at Shoney's Restaurant at the corner of University Drive and Memorial Parkway.

☛ ***Lunch & Learn*** — Marshall's Employee Assistance Program will offer the next Lunch & Learn Seminar on May 7, noon-12:45 p.m., Bldg. 4200, room P-110. The Taxpayer Relief Act of 1997 and how it affects retirement planning will be the topic of discussion. Speaker Dwight Maxwell, assistant vice president and senior financial consultant with Merrill Lynch, Huntsville, will discuss retirement planning (Roth IRAs), investment planning (capital gains), estate planning (increase in the estate and gift tax unified credit), education planning/child tax credit, and other provisions of the new tax act. All Marshall employees and on-site contractors and family members are invited to attend.

☛ ***Toastmasters' International*** — The NASA Lunar Nooners Toastmasters Club will meet May 5 at 11:30 a.m. in the 4610 cafeteria conference room. All Marshall Center employees, contractors and friends are invited to attend. For more information, call Debbie Hagar at 539-4499, or Lee Johns at 544-5142.

☛ ***Public Inquiries*** —Please visit the Public Inquiries Office located in Bldg. 4200, room 101. Imagine better disease-fighting drugs and medicines, a movie studio where out-of-this world effects won't be just "special effects" and booking your accommodations at a bed and breakfast in space--a place to rest and relax after a round of golf without the effects of gravity. Read about these and more in the Advanced Space Transportation Program brochure. Other publications and handouts related to Marshall and NASA are available.

MARSHALL STAR

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